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(54) **DRAIN PLUG FOR AN ABOVE-GROUND POOL**

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E04H 4/00 (2006.01)

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USPC 4/507
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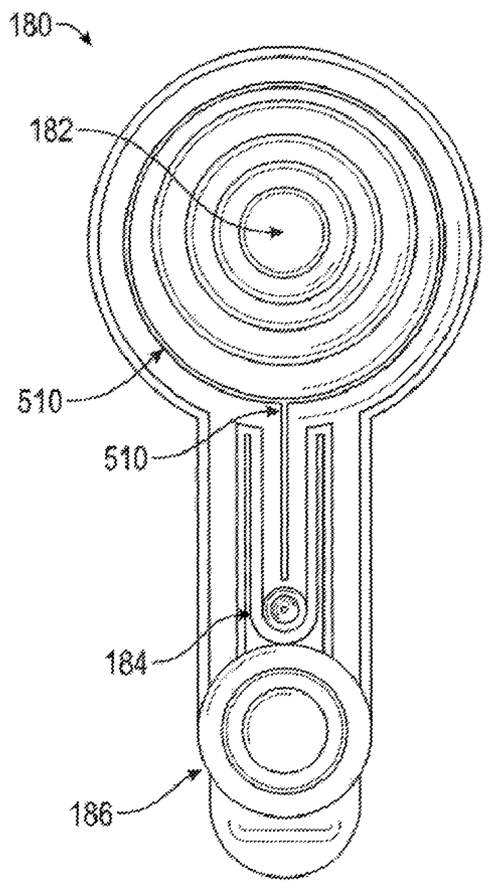
(57) **ABSTRACT**

An improved drain for an above-ground pool is disclosed. A variety of above-ground pool types are considered. Above-ground pools must be drained after use before being stored in a lengthy and time-consuming process. The improved drain can advantageously remain open during the draining process allowing for improved drainage. The drain can comprise a plug member and a locking member. The plug member can be configured to attach to the locking member when open. This and other embodiments are disclosed herein.

9 Claims, 7 Drawing Sheets



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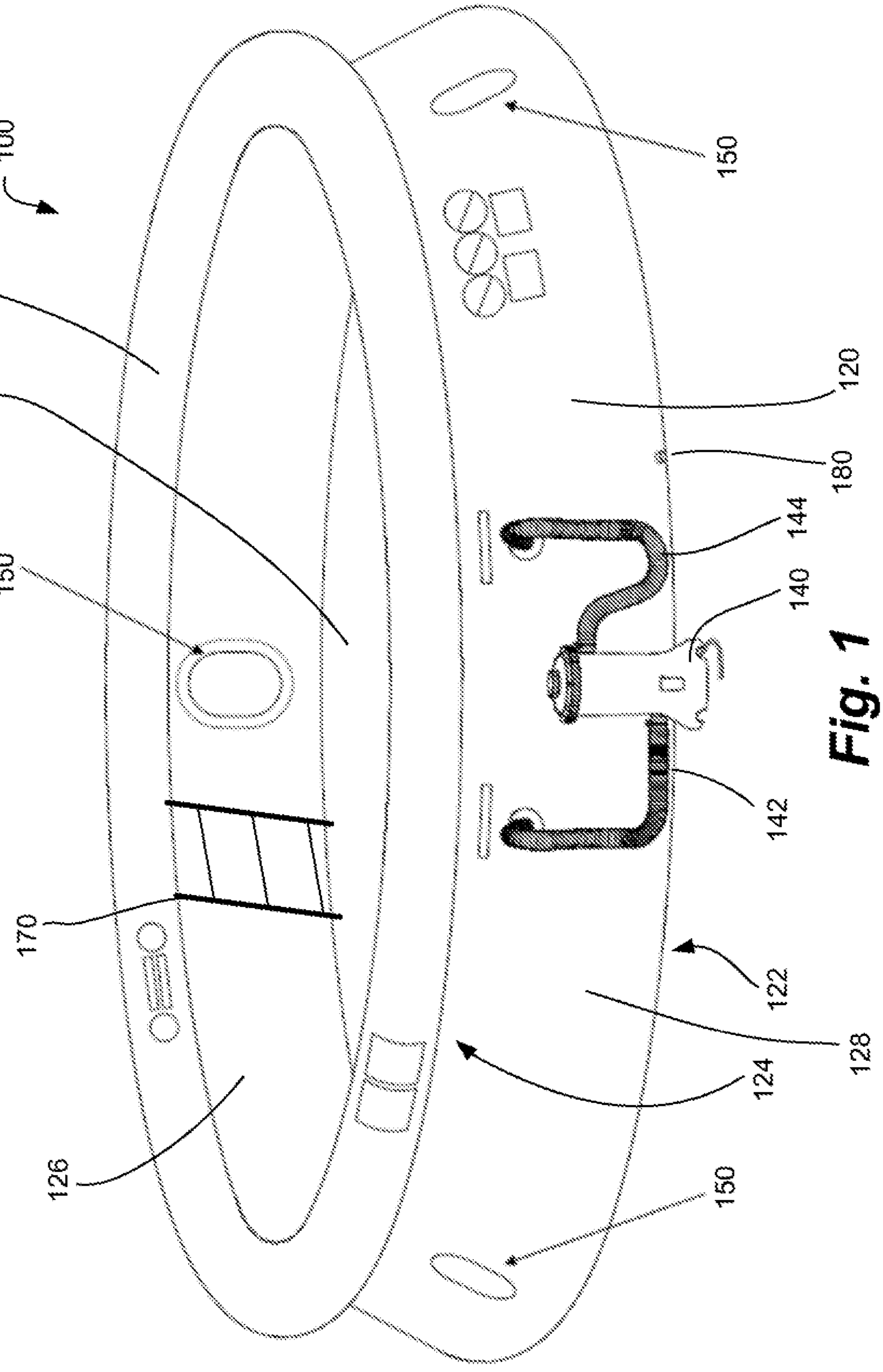

Fig. 1

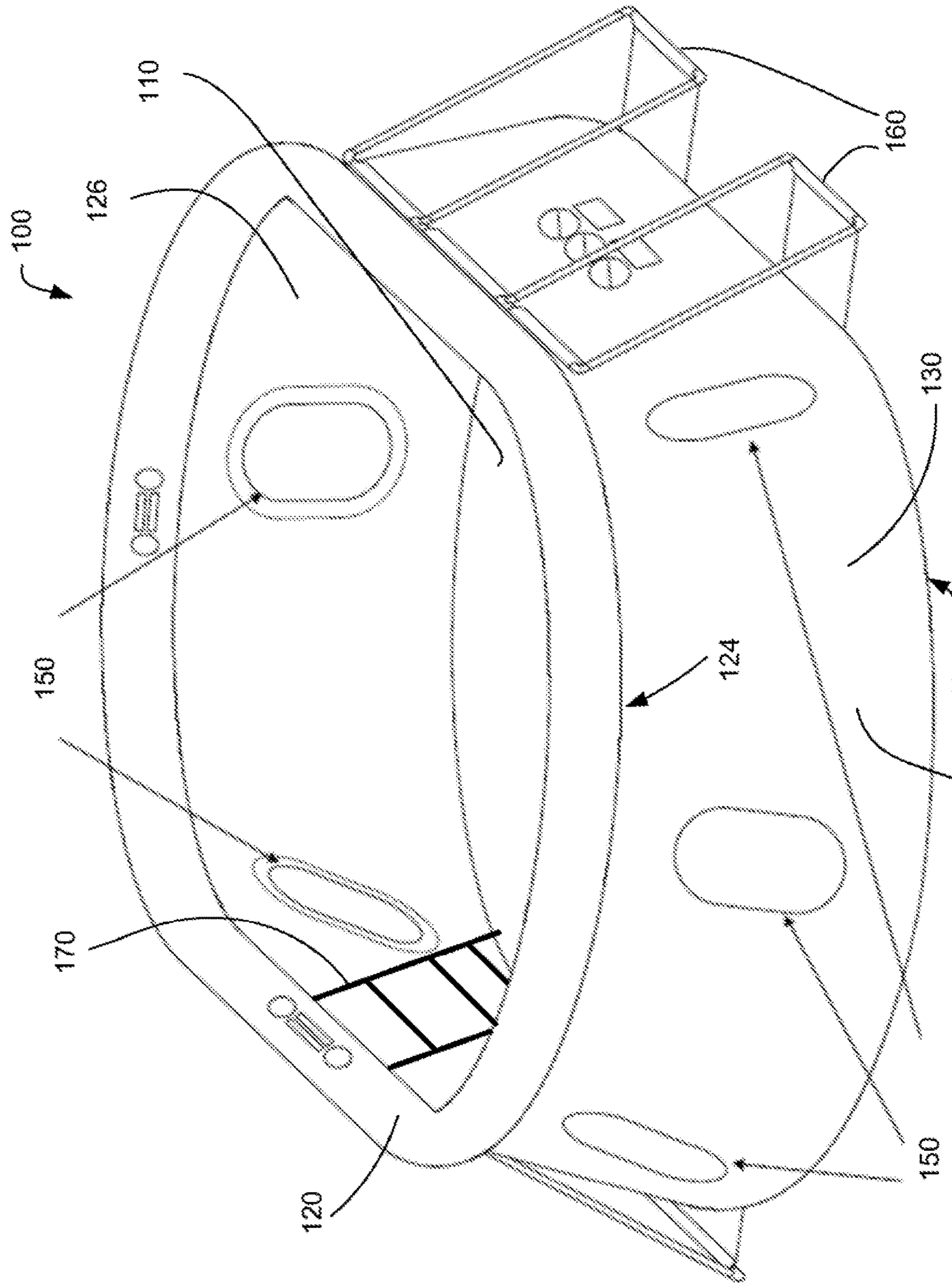

Fig. 2

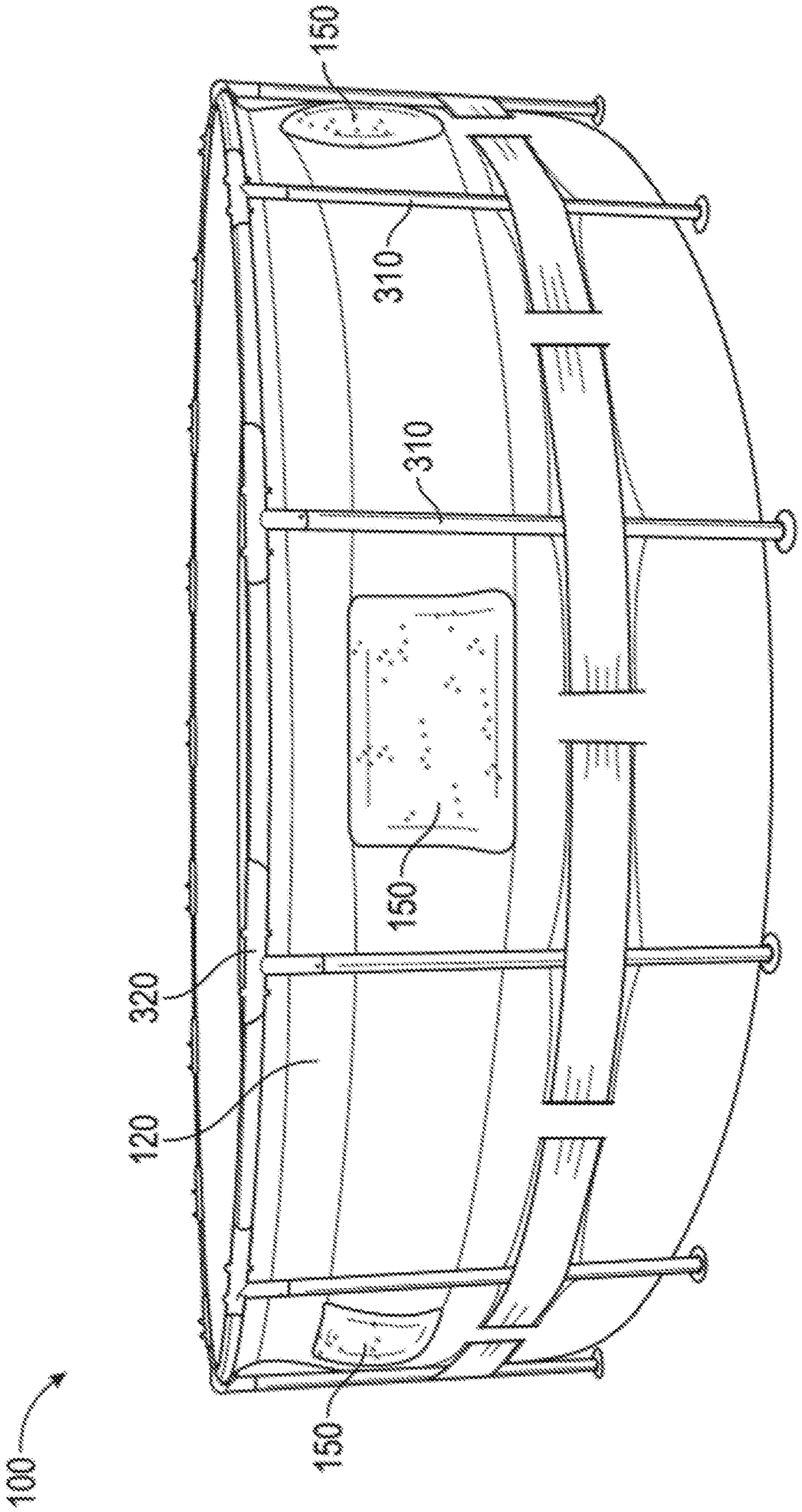

Fig. 3

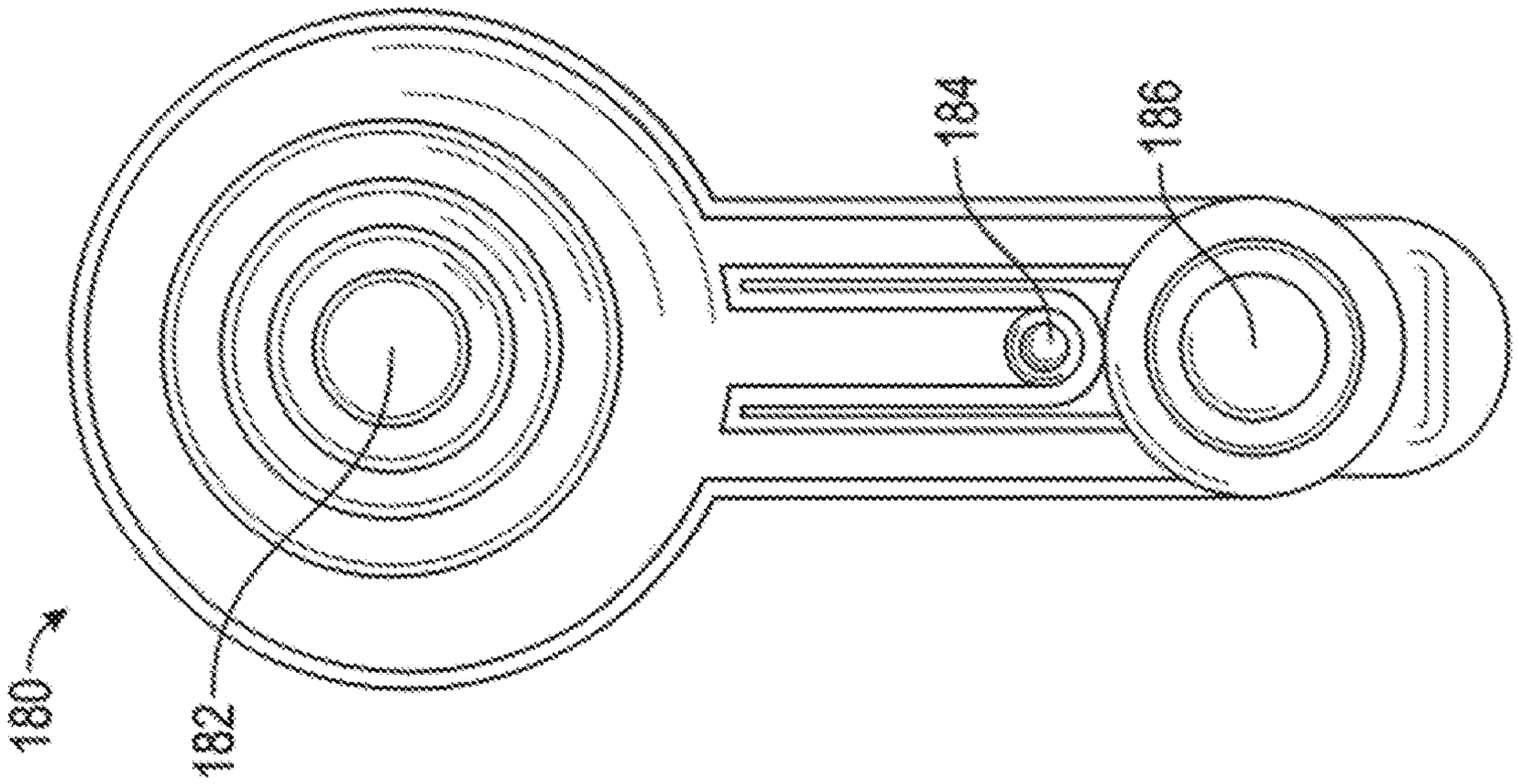

Fig. 4b

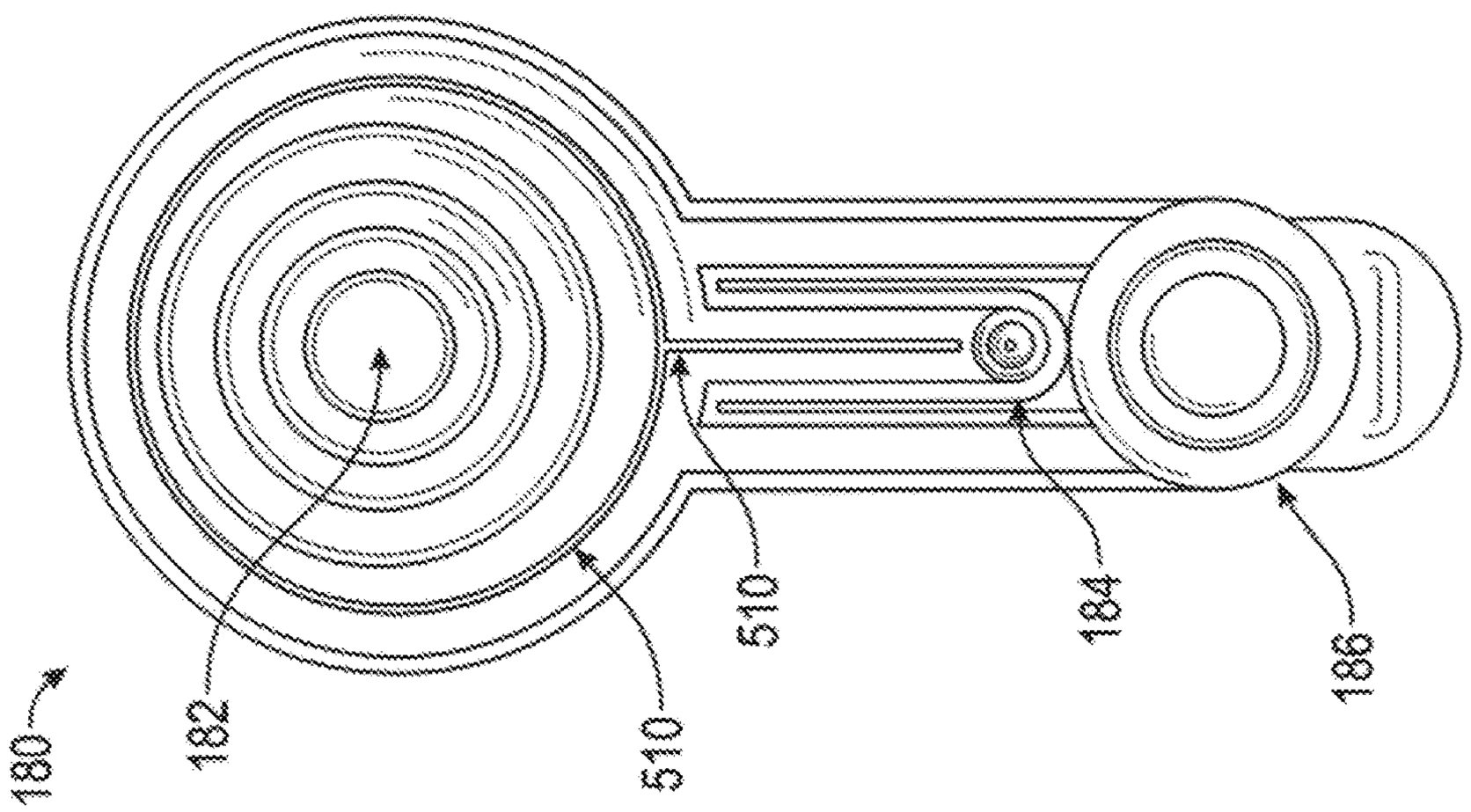

Fig. 4a

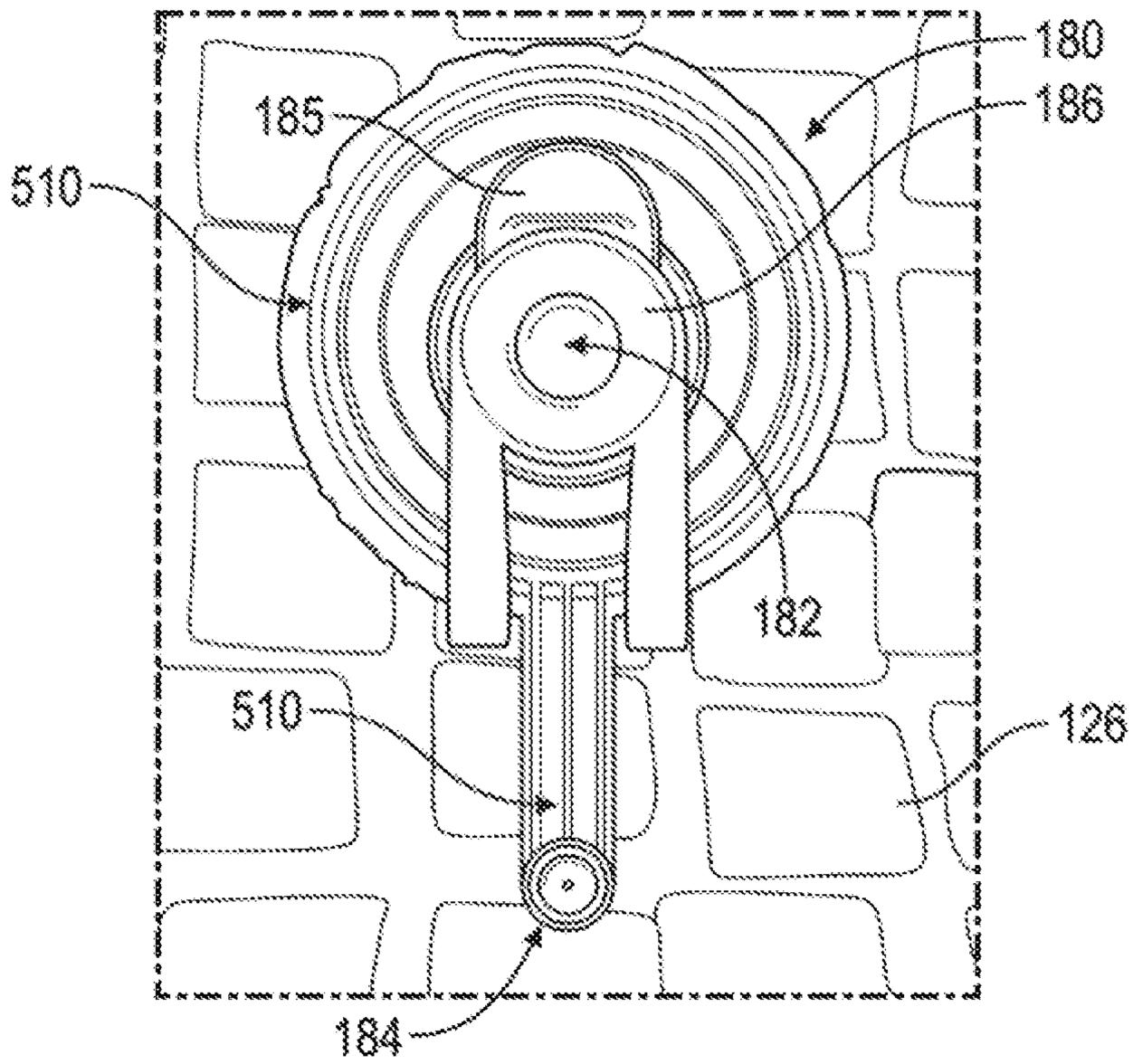

Fig. 5a

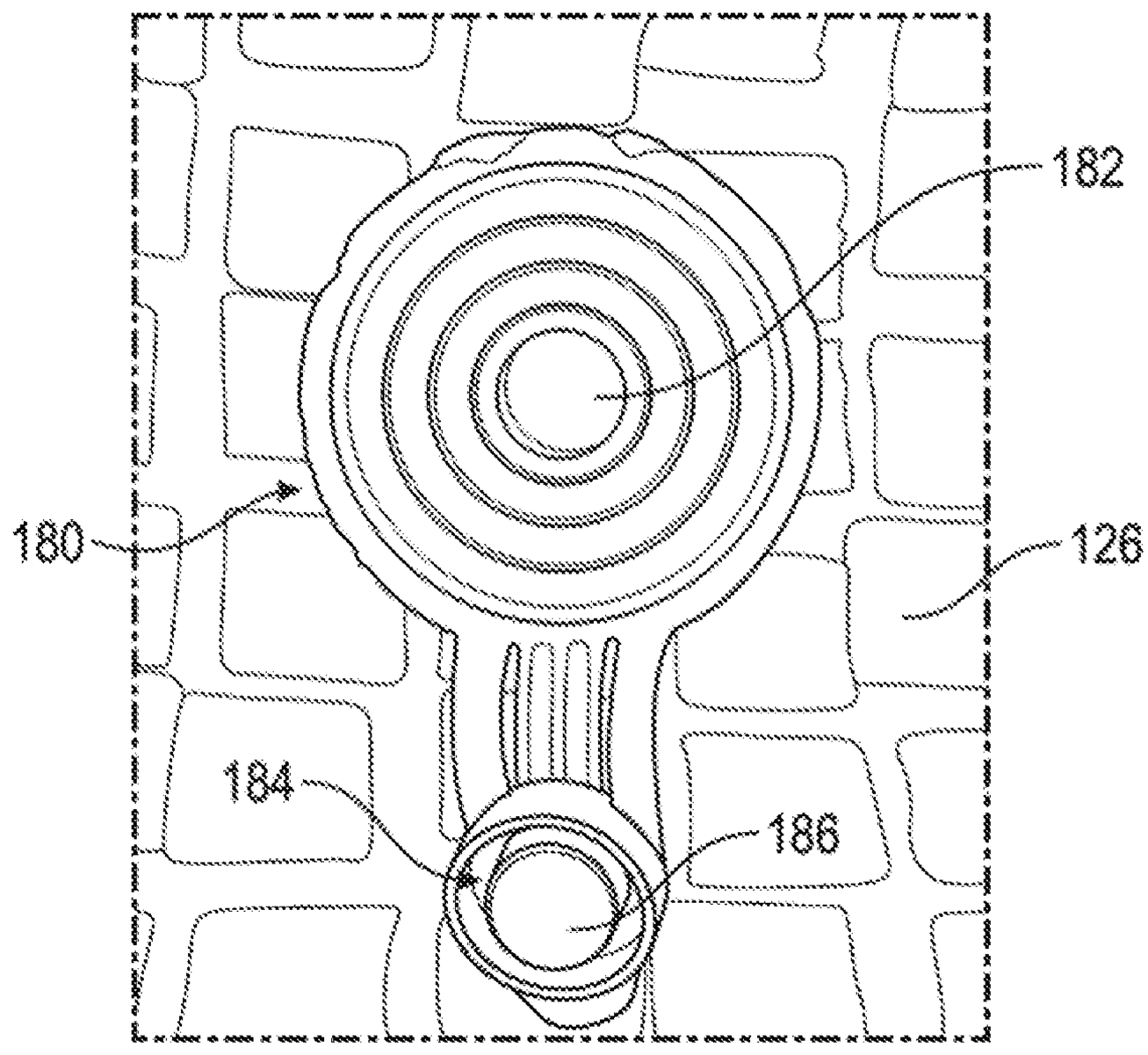

Fig. 5b

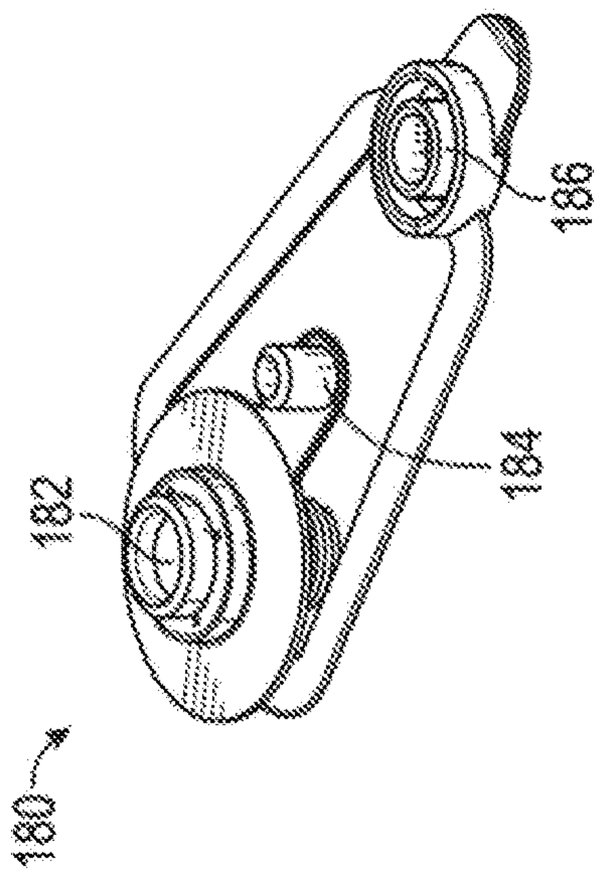

Fig. 6c

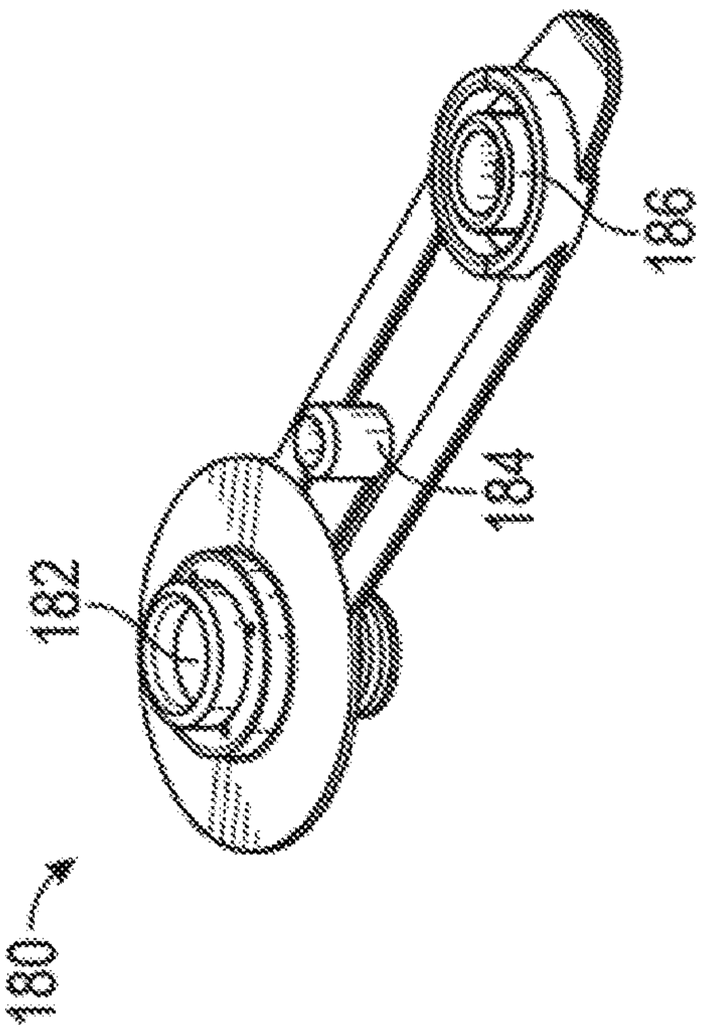

Fig. 6b

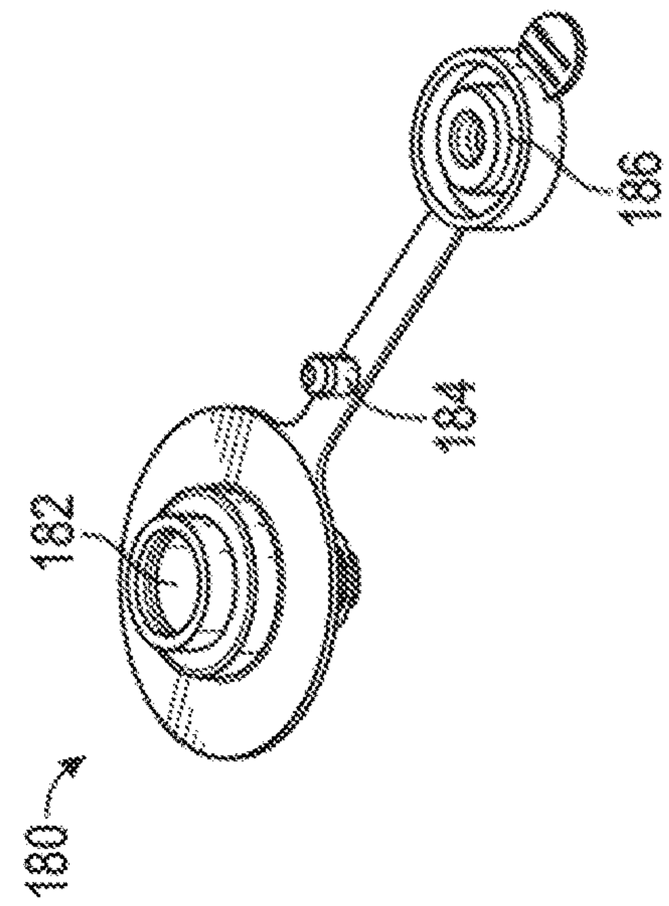

Fig. 6a

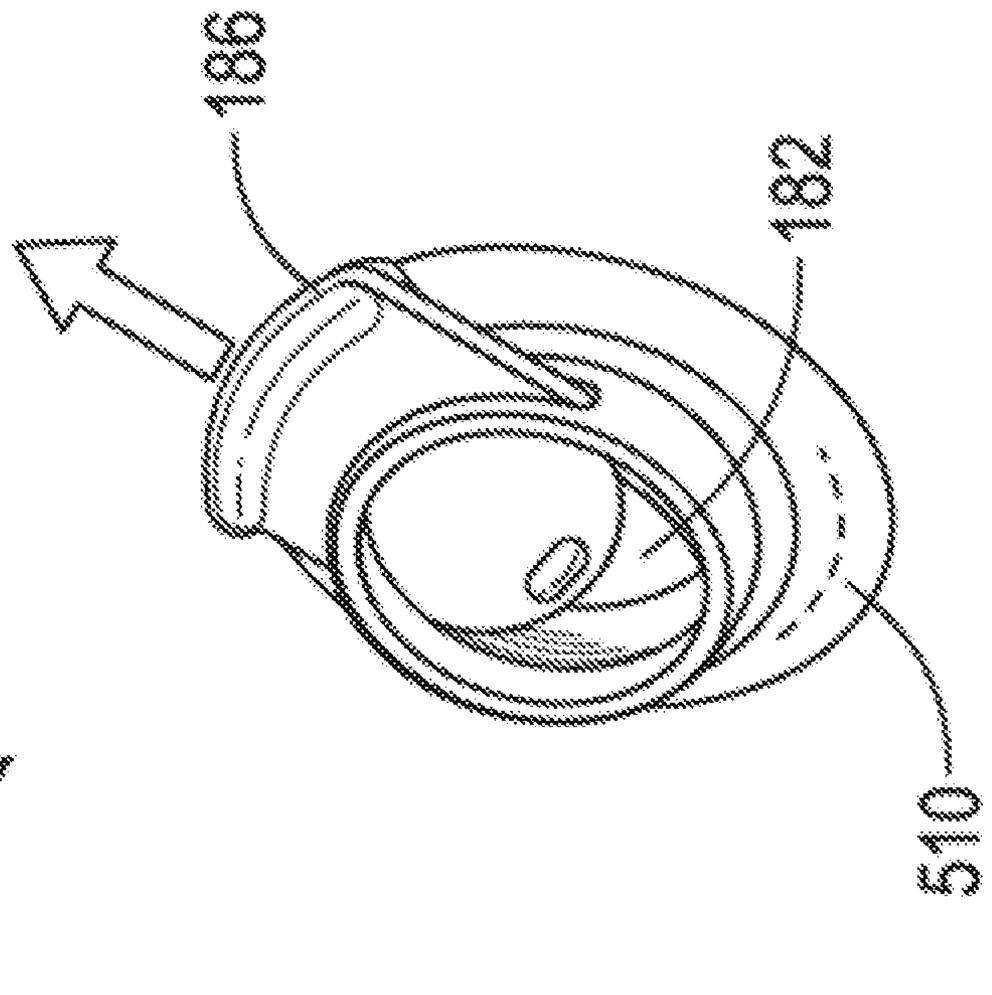

Fig. 8

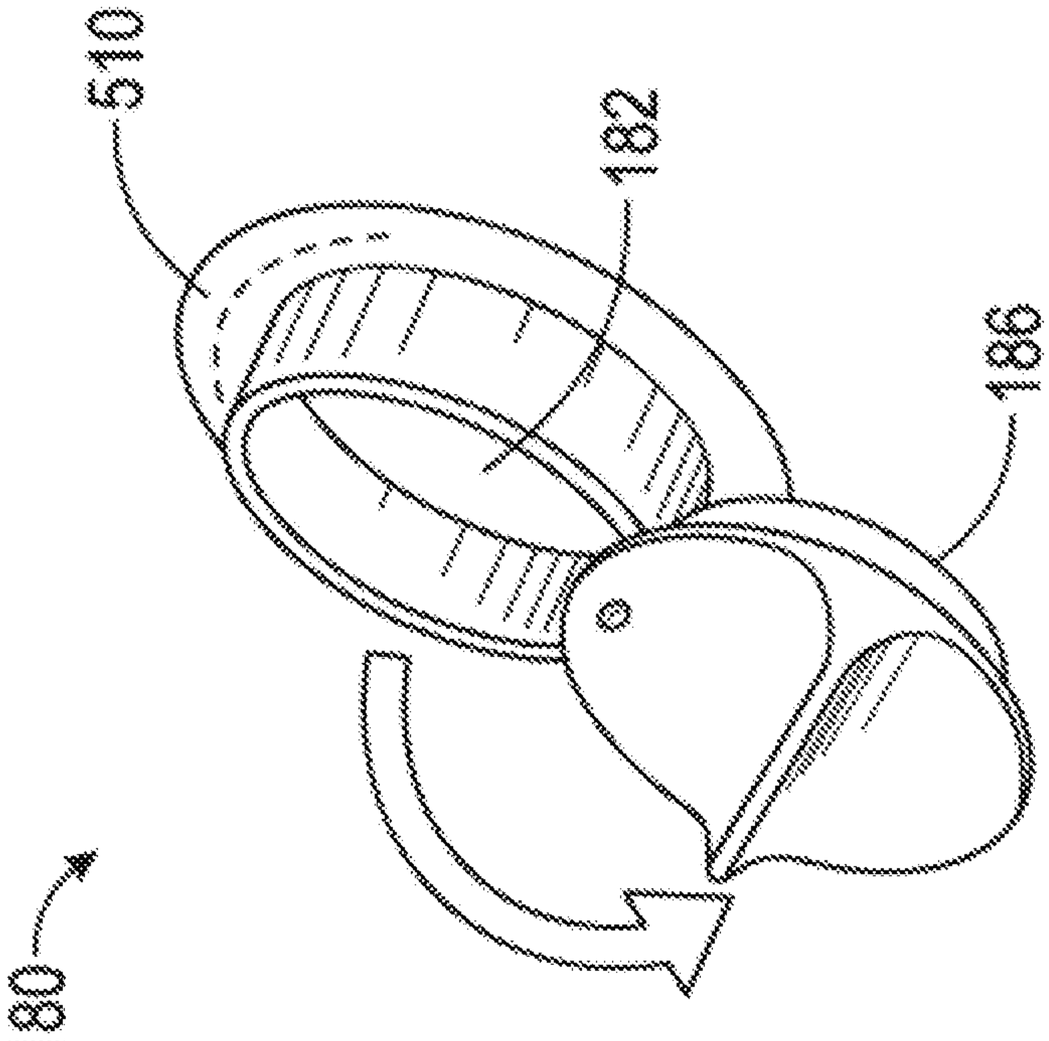

Fig. 7

DRAIN PLUG FOR AN ABOVE-GROUND POOL

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a national stage application, filed under 35 U.S.C. § 371, of International Patent Application No. PCT/US2020/025121, filed on 27 Mar. 2020, which claims benefit under 35 U.S.C. § 119(a), of Chinese Patent App. No. 2019204277666, filed 29 Mar. 2019, the entire contents and substance of which are incorporated herein by reference in their entirety

FIELD OF THE DISCLOSURE

Embodiments of the present disclosure generally relate to above-ground pools and, more particularly, to a locking drain plug for above-ground pools.

BACKGROUND

Simply described, pools are containers of water for people to swim, wade, relax, and play in. In their many forms, pools can be above-ground pools that extend up from the ground, or below-ground pools that extend down into the ground. Above-ground pools can sometimes be temporary, providing relaxation and enjoyment along with the ability to be removed and stored after use. Below-ground pools, however, are usually more permanent. Many types of above-ground pools exist. Some designs, for example, can be inflatable. Other designs can have metal frames and sidewalls, or modular panels that attach to one another. Above-ground pools can come in any number of different shapes and sizes. While above-ground pools provide the convenience of storage and flexibility of being temporary, the need remains to fill the pool with water before each use (or season of use), and subsequently drain the water after each use (or season of use) before disassembling and storing the pool.

No matter the design, shape, or size of the above-ground pool, all pools must go through a draining process before they can be stored after use. This draining process can be time-consuming and may require user supervision. Improved methods for draining a pool and improving the user experience while maintaining the flexibility of an above-ground pool are desirable.

SUMMARY

Aspects of the presently disclosed technology relate to improved methods for draining an above-ground pool while retaining the modularity and storage convenience of the pool and improving the ease of operation and time consumed for the draining process. Embodiments of the present disclosure address this need as well as other needs that will become apparent upon reading the description below in conjunction with the drawings.

In some embodiments, aspects of the disclosed technology provide a collapsible swimming pool with improved drainage devices. A pool of the present disclosure can include a drain that includes a drain hole and a drain plug member. The drain also may include a locking member. Accordingly, the drain plug member can be configured to detachably attach to the drain hole in a closed position and to the locking member in an open position. As will be appreciated, when the drain plug member is locked in the open position, the drain hole remains substantially unobstructed by the drain plug member. The drain can be constructed from a soft or hard plastic material, or a combination of the two, and the drain assembly can be disposed on a side wall of the pool through a standard attachment method such as welding.

The pool can be circular and comprise a single side (i.e., side wall), but as will be understood by those skilled in the art, the pool may include more than one side and thus take on a variety of shapes. Pools of the present disclosure also can include a base wherein the side wall is joined to the base. Pools of the present disclosure also may include at least one porthole. Pools also may include a generally transparent side wall. For example, a side wall can comprise a generally transparent sheet attached to the side wall. The transparent sheet can be attached to the side wall by one or more welds. The side wall may comprise a single, transparent layer.

In accordance with some embodiments, the pool can be supported by a frame. For example, supports such as vertical rib supports can be coupled proximate the side wall of the pool. The supports can be attached to some of the material making up the side wall and can also be attached to a support ring proximate the top of the pool.

Also disclosed herein are methods for making the previously discussed pools. Further features of the disclosed technology, and the advantages offered thereby, are explained in greater detail hereinafter with reference to specific embodiments illustrated in the accompanying drawings, wherein like elements are indicated by like reference designators.

Reference will now be made to the accompanying figures, which are not necessarily drawn to scale.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate multiple embodiments of the presently disclosed subject matter and serve to explain the principles of the presently disclosed subject matter. The drawings are not intended to limit the scope of the presently disclosed subject matter in any manner.

FIG. **1** is a perspective view of a pool having a drain, in accordance with some embodiments of the present disclosure.

FIG. **2** is a perspective view of another pool having a drain and braces, in accordance with some embodiments of the present disclosure.

FIG. **3** is a view of the exterior of a pool having a frame and support members, in accordance with some embodiments of the present disclosure.

FIG. **4***a* is a drain assembly for a pool, in accordance with some embodiments of the present disclosure.

FIG. **4***b* is a drain assembly for a pool, in accordance with some embodiments of the present disclosure.

FIG. **5***a* is an interior view of a pool having a drain assembly in a closed position, in accordance with some embodiments of the present disclosure.

FIG. **5***b* is an interior view of a pool having a drain assembly in an opened position, in accordance with some embodiments of the present disclosure.

FIG. **6***a* is a drain assembly for a pool, in accordance with some embodiments of the present disclosure.

FIG. **6***b* is a drain assembly for a pool, in accordance with some embodiments of the present disclosure.

FIG. **6***c* is a drain assembly for a pool, in accordance with some embodiments of the present disclosure.

FIG. **7** is a drain assembly for a pool, in accordance with some embodiments of the present disclosure.

FIG. **8** is a drain assembly for a pool, in accordance with some embodiments of the present disclosure.

DETAILED DESCRIPTION

Although certain embodiments of the disclosure are explained in detail, it is to be understood that other embodiments are contemplated. Although embodiments of the disclosure are explained in detail as being systems and methods for a pool with improved drainage assemblies, it is to be understood that other embodiments are contemplated, such as embodiments employing other types of containers, drains, plugs, materials, pools, and the like.

As described above, a problem with existing above-ground pools is that all pools must go through a draining process before they can be stored after use. This draining process is time-consuming and may require user supervision. Improved methods for draining a pool and improving the user experience while maintaining the flexibility of an above-ground pool are desirable.

A pool of the present disclosure can be provided comprising a base, a side wall (or side walls), and a drain aperture. The pool can further comprise a drain assembly configured to fit within the drain aperture. The drain assembly can be welded to the side wall (or one of the side walls) to prevent leaks and maintain structural integrity. The drain assembly also can include a drain hole, a drain plug member, and a locking member. The drain plug member can be configured to detachably attach to the drain hole through an interference fit in a closed position. As would be appreciated by one of skill in the art, the interference fit can be further sealed by the hydrostatic pressure sealing the drain plug member in the drain hole. Additionally, the drain plug member can be configured to detachably attach to the locking member in an open position such that the drain hole remains substantially unobstructed. As will be appreciated, such a configuration would provide for improved draining capabilities and overall improved user experience when storing the pool.

Pools generally are formed by joining a base, along its perimeter, to a side wall at or near one edge of the side wall. Along the edge of the side wall not joined to the base, either an upward force providing member or a shape retaining member, or a combination of the two, may be positioned. The upward force providing member or shape retaining member generally has at least a portion coupled proximate the end of the side wall not joined to the base (i.e., the top of the side wall). The upward force providing member may comprise a variety of different elements capable of aiding the transformation of the collapsible container from a collapsed configuration to an expanded configuration by erecting the side wall. For example, the upward force providing member might be a floating device that floats on liquid deposited in the container, causing the side wall to rise as more liquid is deposited in the container. The upward force providing member may also be a ring attached to the side wall and supported by support members.

A support member and/or shape retaining member may be formed from one or more support members having at least a portion coupled proximate to the side wall of the pool. For example, vertical rib supports may be used as an upward force providing member, a shape-retaining member, or both. Such vertical ribs may be formed from individual inflatable portions, or may be a foam insert, metal or polymer rod, or the like. According to some embodiments, such vertical ribs may be collapsible, being formed from collapsible inflatable portions, collapsible foam portions, or other suitable compositions.

Accordingly, it is not intended that the disclosure is limited in its scope to the details of construction and arrangement of components set forth in the following description or illustrated in the drawings. Other embodiments of the disclosure are capable of being practiced or carried out in various ways. Also, in describing the embodiments, specific terminology will be resorted to for the sake of clarity. It is intended that each term contemplates its broadest meaning as understood by those skilled in the art and includes all technical equivalents which operate in a similar manner to accomplish a similar purpose.

It should also be noted that, as used in the specification and the appended claims, the singular forms "a," "an" and "the" include plural references unless the context clearly dictates otherwise. References to a composition containing "a" constituent is intended to include other constituents in addition to the one named.

Ranges may be expressed herein as from "about" or "approximately" or "substantially" one particular value and/or to "about" or "approximately" or "substantially" another particular value. When such a range is expressed, other exemplary embodiments include from the one particular value and/or to the other particular value.

Herein, the use of terms such as "having," "has," "including," or "includes" are open-ended and are intended to have the same meaning as terms such as "comprising" or "comprises" and not preclude the presence of other structure, material, or acts. Similarly, though the use of terms such as "can" or "may" are intended to be open-ended and to reflect that structure, material, or acts are not necessary, the failure to use such terms is not intended to reflect that structure, material, or acts are essential. To the extent that structure, material, or acts are presently considered to be essential, they are identified as such.

It is also to be understood that the mention of one or more method steps does not preclude the presence of additional method steps or intervening method steps between those steps expressly identified. Moreover, although the term "step" may be used herein to connote different aspects of methods employed, the term should not be interpreted as implying any particular order among or between various steps herein disclosed unless and except when the order of individual steps is explicitly required.

The components described hereinafter as making up various elements of the disclosure are intended to be illustrative and not restrictive. Many suitable components that would perform the same or similar functions as the components described herein are intended to be embraced within the scope of the disclosure. Such other components not described herein can include, but are not limited to, for example, similar components that are developed after development of the presently disclosed subject matter.

According to an embodiment of the disclosure, FIG. **1** shows a container, or swimming pool, comprising a side wall with transparent portions. As shown in FIG. **1**, an above-ground swimming pool (hereinafter "pool") **100** has a base **110**, a side wall **120**, and portholes **150**.

Because the pool **100** is collapsible, the liquid in the pool **100** should be drainable. Thus, a drainage assembly **180** can be integral with the pool **100**. In some embodiments, the drainage assembly **180** is a cork or similar device that is removeable from the pool **100** such that, when removed, the water from the pool **100** may be drained. The drainage assembly **180** also may be a valve enabling control of

draining the pool **100**. One skilled in the art would appreciate that the drainage assembly **180** may be many devices enabling easy draining of the pool **100**, safely and environmentally. The drain assembly **180** may also comprise a hard or soft plastic material, or combination thereof, and can be disposed substantially within a drain aperture in the side wall **120**.

As shown in FIGS. **1-3**, the pool **100** may comprise a drain assembly **180**. The drain assembly **180** can be located in various locations on the pool **100** as appropriate. For example, the drain assembly **180** can be disposed on a side wall **120** of the pool and can substantially surround a drain hole aperture formed in a side wall **120**. The drain assembly **180** also can be disposed on a base **110** of the pool as appropriate. The drain assembly **180** also can be disposed on a bottom **122** of the side wall **120**. In some embodiments, the drain assembly can be disposed on an area substantially between the side wall **120** and the base **110**.

FIGS. **4***a* and **4***b* illustrate an embodiment of a drain assembly **180** for a pool **100**. The drain assembly **180** can be fitted around a drain aperture cut into a side wall or base of the pool (not shown). The drain assembly **180** can comprise a drain hole **182**, a drain plug member **186**, and a locking member **184**. Welds **510** can be used to attach the drain assembly **180** to a side wall **120** or base **110** of the pool **100**. The drain assembly **180** can comprise any hard or soft plastic material, or combination thereof, including but not limited to, polyethylene, polypropylene, polyethylene terephthalate, polystyrene, polystyrene butadiene, polybutylene succinate, polyester, polycarbonate, polyvinyl chloride, polymethyl methacrylate, acrylonitrile butadiene styrene, chlorinated polyvinyl chloride, nylon, polylactic acid, polytetrafluoroethylene, or a combination thereof.

As shown in FIGS. **5***a* and **5***b*, the drain assembly **180** can be attached to an interior side wall **126** of a pool through welds **510**. The welds **510** may join the drain assembly to the interior side wall **126** or any other part of the pool **100** by way of a number of commonly known suitable techniques, such as sewing, adhesives, bonding, lamination, RF welding, other suitable joining techniques, and the like. The drain assembly **180** can comprise a drain hole **182**, a drain plug member **186**, and a locking member **184**. In some embodiments, the drain hole **182** and welds **510** can be arrange in a concentrically circular pattern to match the shape of a drain aperture cut into an interior side wall **126**. It is understood that the drain hole **182** and welds **510** can be arranged in any practical shape.

In some embodiments, the locking member **184** can be radially disposed to the drain hole **182** and also can be fastened to a side wall **126** through welds **510**. In some embodiments, the locking member **184** and the drain hole **182** can be connected through a member, or multiple members, comprising the same material as the locking member **184** and the drain hole **182**. In some embodiments, the locking member **184** can be separate from the drain hole **182** and fastened to an interior side wall **126** on its own. As shown, the locking member **184** can be configured in such a shape to receive the drain plug member **186**. The locking member **184** can comprise a circular prong configured to adjoin a circular indentation in the drain plug member **186** through an interference fit, as illustrated in FIGS. **5***a* and **5***b*. In such an embodiment, the circular prong of the locking member **184** can have a smaller radius than that of the drain plug member **186**, such that the drain plug member **186** can fit over the circular prong. It is understood that other methods of affixing the drain plug member to the locking member are contemplated, including but not limited to, press fit, friction fit, screw threading, and others known to one of ordinary skill in the art. In some embodiments, the drain plug member **186** can be affixed to the drain hole **182**. As shown, the drain plug member **186** can be configured in such a shape to match the shape of the drain hole **182**.

In some embodiments, the drain plug member **186** can be circular to match the circular drain hole **182**. As shown, the drain plug member **186** can comprise a radial channel around the circumference of the drain plug member configured to fit over the drain hole **182** ridge in an interference fit. As would be appreciated by one of skill in the art, such an embodiment would provide an increased seal during use due to the hydrostatic pressure of the pool pushing on the drain plug member to increase the interference fit. The drain plug member **186** can have an additional radial channel, or ring, concentric with the first ring around the circumference of the drain plug member **186**. The second ring can be configured to fit over the locking member **184** in an interference fit. In such an example, the interference fit can keep the drain plug member **186** fastened to the locking member **184** and substantially clear of the drain hole **182**. The first and second rings can be disposed on opposite faces of the drain plug member **186**. For example, the first ring to fasten to the drain hole **182** can be on a front face of the drain plug member **186**, and the second ring to fasten to the locking member **184** can be on a back face of the drain plug member **186** (opposite from the first ring). An example of the first and second rings can be seen in FIGS. **5***a* and **5***b*.

The drain plug member **186** can further comprise a flap **185** made from excess material to provide a flap for easier gripping on the drain plug member. As would be appreciated, such a flap **185** would provide for easy detachment of the drain plug member **186** from the drain hole **182** or the locking member **184**. As shown in FIG. **5***a*, the drain plug member **186** can be configured to detachably attach to the drain hole **182** in a closed position. Using the flap **185**, a user of the pool can easily detach the drain plug member **186** from the drain hole **182** and transition to an open position.

Further, as shown in FIG. **5***b*, the drain plug member **186** can be configured to detachably attach to the locking member **184** in an open position. As would be appreciated by one of ordinary skill in the art, such an embodiment would retain the drain plug member **186** in the open position and leave the drain hole **182** substantially unobstructed. The open position therefore can provide improved drainage capabilities of the pool and improved user experience when draining the pool before storage.

FIGS. **6***a*-**6***c* illustrate alternative embodiments of an improved drainage assembly **180** for an above-ground pool. As shown, some embodiments can comprise a drain hole **182**, a locking member **184**, and a drain plug member **186**. As shown, the drain plug member **186** can be connected to the drain hole **182** in a number of ways. In some embodiments, the drain plug member **186** can connect to the drain hole **182** through one or more attaching members comprising the same material as the drain assembly **180**. In some embodiments, the attaching members can be welded to the same surface as the drain assembly **180**, such as a pool side wall **120** or base **110**.

In some embodiments, the drain plug member **186** can be separate from the locking member **184**. For example, the locking member **184** can be a separate unit made of hard or soft plastic and welded to the pool side wall **126** or base **110** near the drain hole **182**. In such an embodiment, there would be no material connecting the drain hole **182** to the locking member **184** except when the drain plug member **186** was detachably attached to the locking member **184**.

In some embodiments, the drain plug member **186** can comprise screw threading on two or more sides. For example, the drain plug member **186** can fit over the drain hole **182** with an interference fit and contain screw threading on the surface opposite the drain hole **182** configured to rotatably attach the drain plug member **186** to corresponding screw threading on the locking member **184**. Alternatively, the drain plug member **186** can attach to the drain hole **182** with more screw threading as opposed to an interference fit, providing screw threading on both sides of the drain plug.

In some embodiments, the drain assembly **180** can comprise a drain hole **182** and a drain plug member **186**. In such an embodiment, the drain plug member **186** can be retractable when not fastened to the drain hole **182** such that the retracted drain plug member **186** remains substantially clear of the drain hole **182**. For example, the drain plug member **186** can comprise a flap that extends from an attachment to the drain hole **182** through the side wall **126** or base **110** of the pool **100**. A user of the pool **100** can pull on the flap to retract the drain plug member **186** into the side wall **126**, the base **110**, or an area surrounding the drain hole **182** such that the drain hole **182** remains substantially unobstructed by the drain plug member **186**.

In some embodiments, the drain hole **182** can abut the drain plug member **186** such that the drain plug member **186** can be configured to slidably rotate away from the drain hole **182**, as shown in FIG. **7**. In other embodiments, the drain hole **182** can comprise a sliding track for the drain plug member **186** to slide back and forth away from the drain hole **182**, as shown in FIG. **8**. In such embodiments, the drain plug member **186** can be configured to have sufficient frictional force with the drain hole **182** to remain open. In other embodiments, the drain plug member **186** can communicate with a locking member to remain in the open position.

As noted previously, the pool **100** may be made in a variety of shapes, including, but not limited to, circular, as shown in FIGS. **1**, **3**, and **4**, elliptical, as shown in FIG. **2**, rectangular, square, oblong, oval-shaped, elliptical, rectangular with rounded corners, and the like. Thus, it will be apparent to one skilled in the art that the configuration of the pool **100** may be many shapes. Additionally, the pool **100** may be made in a variety of sizes. The varied sizes and shapes of the pool **100** may result in the pool **100** having more than one side wall **120** forming the perimeter of the pool **100**.

The pool **100** may be a frame pool, as shown in FIGS. **3** and **4**, or a pop-up type of pool, as shown in FIGS. **1** and **2**, both of which are collapsible in nature. As will be appreciated, the pop-up pool is adapted to rise with the amount of water inserted into pool. In some embodiments, and as shown in FIG. **2**, a pop-up pool **100** also may be outfitted with external braces or frames **160** for additional support. The frame pool is typically pre-fabricated and includes a plurality of external vertical braces or frames for supporting the frame pool above the ground. As shown in FIGS. **3** and **4**, a frame pool **100** may comprise external vertical braces **310** and a top brace **320**. As one skilled in the art would appreciate, other types of pools may be used with the present disclosure.

As previously discussed, the pool **100** typically is formed from a base **110** and at least one side wall **120**. The base **110** and side wall **120** may be formed from multiple varied materials. The base **110** and side wall **120** may be formed of the same material or different materials, and in embodiments involving more than one side wall **120**, each side wall **120** may be formed of the same or different materials. For example, in some embodiments, the base **110** and side wall **120** of the pool **100** may be formed from a natural textile (e.g., burlap, jute, etc.) or synthetic material (e.g., plastic, polyurethane, PVC, nylon, etc.). In some embodiments, the base **110** may be formed from a natural textile and the side wall **120** may be formed of a synthetic material. Many materials (including water-permeable textiles, etc.) may be used to construct a pool; the materials, however, should be treated to retain water. For example, such materials could be adhered to, laminated with, coated with, or bonded to a material impermeable to water. In accordance with the embodiment shown in FIG. **1**, the base **110** may be formed from a nylon shell, which may be laminated or otherwise treated to hold water. For example, the nylon shell might be bonded to another material, such as a polyurethane, PVC, vinyl, or other suitable impermeable lining to provide the desirable waterproof qualities, and to provide a more pleasing tactile quality to the interior of the pool **100**. Similarly, the side wall **120** of the pool **100** may be constructed from these materials, or other materials having similar suitable qualities. The materials that are used may be selected for their durability.

For example, the base **110** may be formed from materials that are more durable than the side wall **120**, as this section of the pool **100** would likely be subjected to more wear than that experienced by the side wall **120**. Also, as described, the base **110** and side wall **120** may be formed from a combination of materials, which may be adhered or bonded together. The materials used for the various portions of the pool **100**, including, for example, the base **110** and the side wall **120**, may be joined by way of a number of suitable techniques, such as sewing, adhesives, bonding, lamination, RF welding, other suitable joining techniques, and the like. The connection of the base **110** to the side wall **120** may be along the bottom **122** of the side wall **120**. The base **110** includes a perimeter, wherein the side wall **120** may be connected about the perimeter of the base **110**.

In some embodiments, the side wall **120** may include an inner wall **126** and an outer wall **128**. The inner wall **126** may be sealable to the outer wall **128** by welding, adhesives, or the like. The side wall **120** may be inflatable or non-inflatable. Further, the side wall **120** may be non-spring activated.

As noted above, in some embodiments, a large portion of the side wall **120** may be transparent in nature. Such a portion would be larger than the portholes **150** and would comprise a portion or all of the side wall **120** itself. For example, half of the side wall **120** may be transparent in nature, or the entire side wall **120** may be transparent. As will be appreciated, side walls **120** having a substantial portion being transparent are more desirable to consumers as they enable a significantly larger viewing area, enabling the user to see into or out of the pool.

In some embodiments, the side wall **120**, having a substantial portion being transparent, may comprise a clear window sheet **500** attached between a clear inner wall **126** and a clear outer wall **128**. In some embodiments, multiple clear window sheets **500**, of sufficient size, may be welded together to form a unified side wall **120**. In some embodiments, a single clear window sheet **500**, of sufficient thickness, may form a unified side wall **120**. In some embodiments, the unified side wall **120**, having a substantial portion being transparent, takes the place of a side wall **120** with portholes **150**, with all other components of the pool **100** attaching to the side wall **120** as described elsewhere in this disclosure. In some embodiments, the side wall **120** can comprise a plurality of side wall sections (e.g., two or more

side wall sections), and multiple clear window sheets **500**, of sufficient size, may be welded together to form a side wall section. In some embodiments, some side wall sections can be transparent while other side wall sections can be solid. For example, the side wall sections can alternate between transparent and solid or be arranged in any other pattern. As would be appreciated by one of ordinary skill in the art, such an embodiment would provide greater transparency than simply having portholes and provide another level of user customization to arrange the transparent side walls sections as desired.

As shown in FIGS. **1-3**, the pool **100** may comprise a porthole **150**, or a plurality thereof. The portholes **150** may be similar to a window permitting one to see into the pool **100** or out of the pool **100**. The portholes **150** may further enable one to determine the level of liquid within the pool **100**. As also shown, for example, in FIGS. **1** and **2**, the portholes **150** may be of a particular shape. In some embodiments, the shape of the portholes **150** may be determined by the shape of apertures cut into the walls **126**, **128** of the pool **100**. As shown in FIG. **1**, the shape of the portholes **150** may be elliptical or substantially elliptical. As shown in FIG. **2**, in some embodiments, the shape of the portholes **150** may be circular or substantially circular. As shown in FIG. **5***a*, in some embodiments, the shape of the portholes may be substantially rectangular with rounded corners. As will be apparent to one skilled in the art, however, the porthole **150** may be many shapes, such as square, rectangular, oblong, and the like. In some embodiments, as shown in FIGS. **1** and **2**, the portholes **150** may be spaced evenly about the side wall **120**.

Portholes **150** may comprise a generally transparent window sheet **500** that is attached to the side wall **120** (or inner wall **126**). Moreover, the window sheet may be attached between the inner wall **126** and the outer wall **128**. In other words, the window sheet **500** may be "sandwiched" to and between the inner wall **126** and the outer wall **128**, and attached to both walls by conventional means. For example, the window sheet **500** may be attached to the side wall **120** by welding the window sheet **500** to the side wall **120** with one or more welds **510**. In some embodiments, the welds **510** may be made around the circumference of the aperture cut into the side wall **120** and may have substantially the same shape as the aperture. The welds **510** may be continuous welds, which may help prevent the fluid in the pool **100** from leaking. Successive welds **510** may be concentric and further from the center of the aperture in side wall **120**, as illustrated in FIGS. **5***a* and **5***b*. Specifically, there may be two welds **510**, three welds **510**, four welds **510**, five welds **510**, or more, moving outward from the center of the aperture in the side wall **120**. The successive welds **510** may aid in reinforcing the pothole **150** to make it more durable than known portholes. That is, since there may be a plurality of welds **510**, if one weld **510** fails, the other welds **510** may maintain the integrity of the porthole **150** and thus the pool **100**. Alternatively or additionally, the window sheet **500** may be attached to the side wall **120** by using an adhesive sub stance.

The window sheet **500** may be substantially similar in shape to the aperture in side wall **120**, but it may also be of a different shape. If the window sheet **500** is a different shape than the aperture it covers, the window sheet **500** may still be attached by welding or adhesive, however the welds need not be concentric. For example, there may be a weld near the outer edge of the window sheet **500**, and a second weld closer to and surrounding the aperture in the wall.

In some embodiments, the window sheet **500** can be attached to the side wall **120** by securing it between inner wall **126** and outer wall **128**. In such an embodiment, welding or adhesives may be used in a manner similar to that discussed above with respect to FIGS. **5***a* and **5***b*.

The window sheet **500** may comprise a clear flexible polymer, such as flexible PVC. Likewise, the side wall **120** (or inner wall **126**) also may be a flexible polymer, such as flexible PVC. The window sheet **500** and/or side wall **120** (or inner wall **126**) can further comprise a plasticizer material. As would be appreciated by one of ordinary skill in the art, the addition of a plasticizer would reduce the brittleness of the pure PVC material and increase the overall material strength of the window sheet and eliminate the need for reinforcing material. The addition of a plasticizer would increase the flexibility and durability of the window sheet. Such an embodiment can provide numerous advantages, such as retaining structural integrity and resisting rupture while being a flexible and easily collapsible material. In other words, the window sheets may be bent, flexed, and strained during storage and packaging, but will remain robust and structurally sound when the pool is filled and in use. Additionally, as will be appreciated, use of two similar materials may make attaching the window sheet **500** and the side wall **120** easier and also increase the strength of the attachment. Specifically, in some embodiments, such as embodiments employing high frequency welding (or RF welding) to form welds **510**, it may desirable to have materials with similar melting points and chemical compositions to form a stronger weld **510** and make the welding process less complex.

In some embodiments, the portholes **150** may aid in safety, as the portholes **150** may enable improved viewing into the pool **100** through the side wall **120**. As would be appreciated by one of ordinary skill in the art, such an embodiment would be improved provided the window sheets in the portholes were sufficiently strong to not require a wire mesh or any reinforcing material. If the portholes **150** are designed to be removable by suitable means, a porthole **150** may also be used as a drainage device, enabling quick emptying of the liquid of the pool **100**. Thus, the portholes **150** may be integrally formed during manufacturing of the side wall **120**, or may be removable, wherein the various sheets are removably attached via a waterproof and leak-proof method. The portholes **150**, however, may also be attached via a non-removable method as discussed above.

The pool **100** may further include a pump device **140**. The pump device **140** can be adapted as a circulation system, and beneficially a cleaning system. The pump device **140** can comprise a first tube **142** coupling a suction port of the pump **140** in fluid communication with a main drain or mobile cleaning device (neither shown) which draws water and settled debris from the bottom of the pool. The pool pump **140** may further comprise a second tube **144** to a coupling device which diverts a small portion of pool "return" water pumped from an outlet port of the pump **140**. Further, pump **140** may be adapted to provide a jet of air bubbles in the water, for a Jacuzzi or spa effect.

FIG. **2** illustrates the pool **100** having a brace or structural support **160**. The support **160** may include vertical rib supports and may be coupled proximate to the side wall **120** of the pool **100**. For example, the support **160** may be inserted within the material making up the side wall **120**. The support members may comprise at least a portion of the flotation device **110** or a support member and may have at least a portion coupled to the top of the side wall **120** and vertically along the side wall **120** to provide buoyancy

and/or rigidity to the side wall **120**. The support members **160** may comprise, for example, one or more inflatable bladders, collapsible foam, removable support members, or the like. One skilled in the art would appreciate that the support members **160** may be used on a frame pool, as well as a pop-up pool for supporting the pool above the ground. In some embodiments, the support members **160** are positioned outside the pool **100**.

The pool **100** may include a ladder **170** to enable one to enter and/or exit the pool **100**. The ladder **170** may be integral with the brace **160**, or not. The ladder **170** may further be insertable into the pool **100**, enabling one to exit the pool **100**. Because a rim of the pool **100** is above the ground, the ladder **170** is preferably flush with the rim for easy entry/exit from the pool **100**.

Methods of manufacturing and assembling a pool **100** also are within the scope of this disclosure. In some embodiments, for example, a pool **100** may be manufactured as is known in the art, with additional method steps added to provide the drain **180**. For example, an aperture may be cut in the side wall **120**. A drain assembly **180** may be attached to side wall **120** as described above by welding, adhesives, or other known methods. In some embodiments of pool **100** having an inner wall **126** and an outer wall **128**, drain assembly **180** may be attached to inner wall **126** only, between the inner wall **126** and the outer wall **128**, or to outer wall **128** only. In some embodiments, the aperture may be cut in the base **110**, a bottom **122** of the side wall **120**, or an area between the base **110** and the side wall **120**.

In some embodiments, as discussed above, one or more welds **510** may be used to secure the drain assembly **180** to side wall **120** or between inner wall **126** and outer wall **128**. Welds **510** may be made around the perimeter of the aperture in side wall **120**. In some embodiments, a plurality of welds **510** is employed. These welds **510** may be oriented in any way sufficient to provide a water tight seal. In some embodiments, the welds **510** may be arranged in a concentric manner around the aperture in the side wall **120** as illustrated in FIGS. **5***a* and **5***b*. This arrangement allows one or more of the welds **510** to fail, while still retaining a water tight seal around the drain assembly **180**. The drain assembly **180** can be joined to another part of the pool, such as the side wall **120**, by way of a number of suitable techniques, such as sewing, adhesives, bonding, lamination, RF welding, other suitable joining techniques, and the like.

An embodiment of the present disclosure can be implemented according to at least the following:

Clause 1: An above-ground pool comprising: a base; at least one sidewall defining an entire interior pool area and joined to the base; and a drain disposed around an aperture in, and affixed to, one of the base and the at least one sidewall, the drain comprising: a drain hole; a locking member; and a drain plug member configured to detachably attach to (i) the drain hole and (ii) the locking member such that, when the drain plug is detachably attached to the drain hole, the drain is in a closed state and a watertight seal is formed between the drain plug member and the drain hole, and when the drain plug is detachably attached to the locking member, the drain is in an open state.

Clause 2: The above-ground pool of clause 1, further comprising a frame comprising a plurality of horizontal pool support members and a plurality of vertical support members.

Clause 3: The above-ground pool of clause 1, wherein the at least one sidewall is a unitary sidewall formed from a single sheet.

Clause 4: The above-ground pool of clause 1, wherein the base is rectangular, rectangular with rounded corners, square, square with rounded corners, circular, oval, oblong, elliptical, triangular, pentagonal, hexagonal, octagonal, or decagonal.

Clause 5: The above-ground pool of clause 1, wherein the at least one sidewall and base comprise polyurethane, PVC, nylon, vinyl, or a textile coated with a material impermeable to water.

Clause 6: The above-ground pool of clause 1, wherein the drain plug member is configured to detachably attach to the drain hole in the closed state through an interference fit between the drain plug member and the drain hole.

Clause 7: The above-ground pool of clause 1, wherein the locking member is configured to receive the drain plug member in the open state through an interference fit between the locking member and the drain plug member.

Clause 8: The above-ground pool of clause 1, wherein the drain is affixed to the one of the base or the at least one sidewall through one or more welds.

Clause 9: The above-ground pool of clause 1, wherein the drain plug member further comprises a flap disposed on an external surface of the drain plug member, the flap configured to allow a user to grip the drain plug member.

Clause 10: A drain for an above-ground pool, the drain comprising: a drain hole; a locking member; and a drain plug member configured to detachably attach to (i) the drain hole and (ii) the locking member such that, when the drain plug member is detachably attached to the drain hole, the drain is in a closed state and a watertight seal is formed between the drain plug member and the drain hole, and when the drain plug member is detachably attached to the locking member, the drain is in an open state; wherein the drain is disposed around an aperture in, and affixed to, one of a base and at least one sidewall of the above-ground pool.

Clause 11: The drain of clause 10, wherein the drain plug member is configured to detachably attach to the drain hole in the closed position through an interference fit.

Clause 12: The drain of clause 10, wherein the locking member is configured to receive the drain plug member in the open position through an interference fit.

Clause 13: The drain of clause 10, wherein the drain is disposed around the aperture with one or more welds.

Clause 14: The drain of clause 10, wherein the drain plug member further comprises a flap disposed on an external surface of the drain plug member, the flap configured to allow a user to grip the drain plug member.

Clause 15: The drain of clause 10, wherein the locking member comprises a circular prong radially disposed from the drain hole, the circular prong configured for receipt by the drain plug member.

Clause 16: The drain of clause 15, wherein the drain plug member comprises a circular indentation configured to receive the circular prong and detachably attach the drain plug member to the circular prong.

Clause 17: A drain for an above-ground pool, the drain comprising: a drain hole including a sliding track; and a drain plug member slidably affixed to the sliding track, the drain plug member configured to slidably engage the drain hole such that, when the drain plug member is slidably engaged to the drain hole, the drain is in a closed state and a watertight seal is formed between the drain plug member and the drain hole, and

when the drain plug member is slidably disengaged from the drain hole, the drain is in an open state; wherein the drain is configured for being affixed to and disposed around an aperture in one of a base or at least one sidewall of the above-ground pool.

Clause 18: The drain of clause 17, wherein the drain is configured to be disposed around the aperture with one or more welds.

Clause 19: The drain of clause 17, wherein the drain plug member further comprises a flap disposed on an external surface of the drain plug member, the flap configured to allow a user to grip the drain plug member.

Clause 20: A drain for an above-ground pool, comprising: a drain hole; and a drain plug member abutting and attached to the drain hole, the drain plug member configured to rotably engage the drain hole such, when the drain plug member is rotably engaged to the drain hole, the drain hole is in a closed state and a watertight seal is formed between the drain plug member and the drain hole, and when the drain plug member is rotably disengaged from the drain hole, the drain is in an open state; wherein the drain is configured for being affixed to and disposed around an aperture in one of a base or at least one sidewall of the above-ground pool.

Clause 21: The drain of clause 20, wherein the drain is configured to be disposed around the aperture with one or more welds.

Clause 22: The drain of clause 20, wherein the drain plug member further comprises a flap disposed on an external surface of the drain plug member, the flap configured to allow a user to grip the drain plug member.

In this description, numerous specific details have been set forth. It is to be understood, however, that implementations of the disclosed technology can be practiced without these specific details. In other instances, well-known methods, structures, and techniques have no been shown in detail in order not to obscure an understanding of this description. References to "one embodiment," "an embodiment," "some embodiments," "example embodiment," "various embodiments," etc., indicate that the implementation(s) of the disclosed technology so described can include a particular feature, structure, or characteristic, but not every implementation necessarily includes the particular feature, structure, or characteristic. Further, repeated use of the phrase "in one embodiment" does not necessarily refer to the same implementation, although it may.

While the present disclosure has been described in connection with a plurality of exemplary aspects, as illustrated in the various figures and discussed above, it is understood that other similar aspects can be used, or modifications and additions can be made to the described aspects for performing the same function of the present disclosure without deviating therefrom. For example, in various aspects of the disclosure, methods and compositions were described according to aspects of the presently disclosed subject matter. However, other equivalent methods or composition to these described aspects are also contemplated by the teachings herein. Therefore, the present disclosure should not be limited to any single aspect, but rather construed in breadth and scope in accordance with the appended claims.

It is to be understood that the embodiments and claims disclosed herein are not limited in their application to the details of construction and arrangement of the components set forth in the description and illustrated in the drawings. Rather, the description and the drawings provide examples of the embodiments envisioned. The embodiments and claims disclosed herein are further capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purposes of description and should not be regarded as limiting the claims.

Accordingly, those skilled in the art will appreciate that the conception upon which the application and claims are based may be readily utilized as a basis for the design of other structures, methods, and systems for carrying out the several purposes of the embodiments and claims presented in this application. It is important, therefore, that the claims be regarded as including such equivalent constructions.

Furthermore, the purpose of the foregoing Abstract is to enable the United States Patent and Trademark Office and the public generally, and especially including the practitioners in the art who are not familiar with patent and legal terms or phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The Abstract is neither intended to define the claims of the application, nor is it intended to be limiting to the scope of the claims in any way. Instead, it is intended that the invention is defined by the claims appended hereto.

What is claimed is:

1. An above-ground pool comprising:

a base;

at least one sidewall defining an entire interior pool area and joined to the base; and

a drain disposed around an aperture in, and affixed to, one of the base and the at least one sidewall, the drain comprising:

a drain hole;

a locking member; and

a drain plug member configured to detachably attach to (i) the drain hole and (ii) the locking member such that, when the drain plug is detachably attached to the drain hole, the drain is in a closed state and a watertight seal is formed between the drain plug member and the drain hole, and when the drain plug is detachably attached to the locking member, the drain is in an open state.

2. The above-ground pool of claim **1** further comprising a frame comprising a plurality of horizontal pool support members and a plurality of vertical support members.

3. The above-ground pool of claim **1**, wherein the at least one sidewall is a unitary sidewall formed from a single sheet.

4. The above-ground pool of claim **1**, wherein the base is rectangular, rectangular with rounded corners, square, square with rounded corners, circular, oval, oblong, elliptical, triangular, pentagonal, hexagonal, octagonal, or decagonal.

5. The above-ground pool of claim **1**, wherein the at least one sidewall and base comprise polyurethane, PVC, nylon, vinyl, or a textile coated with a material impermeable to water.

6. The above-ground pool of claim **1**, wherein the drain plug member is configured to detachably attach to the drain hole in the closed state through an interference fit between the drain plug member and the drain hole.

7. The above-ground pool of claim **1**, wherein the locking member is configured to receive the drain plug member in the open state through an interference fit between the locking member and the drain plug member.

8. The above-ground pool of claim **1**, wherein the drain is affixed to the one of the base or the at least one sidewall through one or more welds.

9. The above-ground pool of claim 1, wherein the drain plug member further comprises a flap disposed on an external surface of the drain plug member, the flap configured to allow a user to grip the drain plug member.

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